

What is claimed is:

1. A storage library system, comprising:
  - a stationary support member having a first axis; and
  - a cartridge transport assembly, comprising:
    - a cartridge retrieving mechanism configured to retrieve a removable media cartridge, said cartridge transport assembly being coupled to the support member, wherein the cartridge retrieving mechanism is positionable in four degrees of freedom.
2. The storage library system of claim 1, wherein:
  - a first degree of freedom of the cartridge retrieving mechanism comprises linear movement along the stationary support member.
3. The storage library system of claim 2, wherein:
  - a second degree of freedom of the cartridge retrieving mechanism comprises linear movement along a second axis approximately orthogonal to the first axis.
4. The storage library system of claim 3, wherein:
  - a third degree of freedom of the cartridge retrieving mechanism comprises linear movement along a third axis approximately orthogonal to the first axis and the second axis.

5. The storage library system of claim 4, wherein:
  - a fourth degree of freedom of the cartridge retrieving mechanism comprises rotational movement about a fourth axis.
6. The storage library system of claim 4, further comprising:
  - a fifth degree of freedom of the cartridge retrieving mechanism comprising radial extension of the cartridge retrieving mechanism about the fourth axis.
7. The storage library system of claim 6, further comprising:
  - an enclosure having a first side wall, an opposing second side wall, and a back wall adjacent to the first and second side walls;
  - a cavity region between the first side wall, the second side wall, and the back wall, the vertical support member and the cartridge transport assembly being positioned in the cavity region.
8. The storage library system of claim 7, further comprising:
  - a plurality of storage bins disposed on the first and second side walls.
9. The storage library system of claim 7, further comprising:
  - at least one tape drive disposed on the back wall.
10. A storage library system, comprising:
  - a stationary support member having a first axis;

a cartridge transport assembly coupled to the stationary support member, the cartridge transport assembly comprising:

- a first carriage coupled to the vertical support member;
- a first actuator coupled to the first carriage and the stationary support member configured to actuate linear movement of the first carriage along the stationary support member;
- a second carriage movably coupled to the first carriage;
- a second actuator engaging the first and second carriages configured to actuate linear movement of the second carriage along a second axis non-parallel to the first axis;
- a third carriage movably coupled to the second carriage;
- a third actuator engaging the second and third carriages configured to actuate linear movement of the third carriage along a third axis non-parallel to the first axis and the second axis; and
- a cartridge retrieval mechanism coupled to the third carriage.

11. The system of claim 10, wherein the cartridge transport assembly further comprises:

- a rotary actuator engaging the third carriage and the cartridge retrieval mechanism configured to actuate rotational movement of the cartridge retrieval mechanism.

12. The system of claim 11, wherein the cartridge transport assembly further comprises:

an extension actuator coupled to the cartridge retrieval mechanism configured to extend the cartridge retrieval mechanism to retrieve a cartridge from a storage bin in the storage library system.

13. The system of claim 12, wherein the cartridge transport assembly further comprises:

a robotics controller for controlling the first, second, third, rotary, and extension actuators, and the cartridge retrieval mechanism.

14. The system of claim 13, further comprising:

a library controller; and  
an umbilical connection coupling the library controller with the cartridge transport assembly.

15. The system of claim 10, further comprising:

a library controller; and  
an umbilical cable coupling the library controller with the cartridge transport assembly, said umbilical cable providing power to the cartridge transport assembly;

wherein the cartridge transport assembly further comprises a power supply coupled to the umbilical cable for receiving power at a first voltage, the power supply configured to convert the power at the first voltage to a plurality of different voltages.

16. The system of claim 10, further comprising:

an enclosure having a first side wall, an opposing second side wall, and a back wall adjacent to the first and second side walls; a cavity region between the first side wall, the second side wall, and the back wall, the vertical support member and the cartridge transport assembly being positioned in the cavity region; and a plurality of storage bins disposed on the first and second side walls.

17. The system of claim 16, further comprising:

at least one tape drive positioned on the back wall of the enclosure.

18. The system of claim 10, wherein the support member is positioned approximately vertically.

19. A method of operating a tape library, comprising:

transmitting instruction signals to a robotics controller disposed on a cartridge transport assembly;

translating the cartridge transport assembly along a stationary support member; and

positioning the cartridge retrieving mechanism in four degrees of freedom relative to the stationary support member.

20. The method of claim 19, comprising:

providing the instruction signals and power at a first voltage to the robotics controller via an umbilical cable; and

converting the power provided via the umbilical cable to a plurality of voltages using a power supply provided on the cartridge transport assembly.

21. A method of assembling a tape library, comprising:
  - assembling a cartridge transport assembly comprising:
    - mounting the cartridge transport assembly to a stationary support member in a storage library system; and
    - prior to mounting the cartridge transport assembly to the stationary support member, testing four degrees of freedom of movement of the cartridge retrieval mechanism.